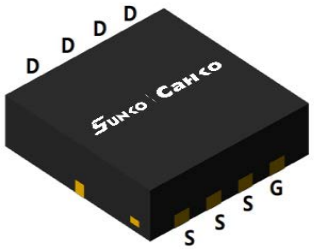
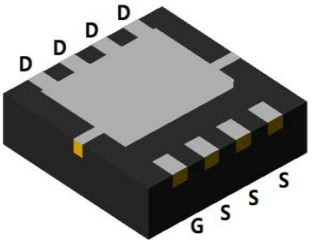
N-Channel Enhancement Mode Field Effect Transistor

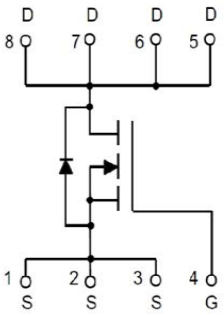


Top View



Bottom View

DFN3333-8L



Product Summary

- V_{DS} 60V
- I_D (Silicon limited) 62A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜7.5 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜10 mohm
- 100% EAS Tested

General Description

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC-DC Converters
- Power management functions
- Industrial and Motor Drive application

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current (Silicon limited)	T_A=25℃	I_D	12	A
	T_A=100℃		7.5	
	T_C=25℃		62	
	T_C =100℃		39	
Pulsed Drain Current [A]		I_{DM}	186	A
Avalanche energy [B]		E_{AS}	162	mJ
Total Power Dissipation [C]	T_A=25℃	P_D	2.2	W
	T_A=100℃		0.9	
	T_C=25℃		45	
	T_C =100℃		18	
Junction and Storage Temperature Range		T_J , T_{STG}	-55～+150	℃

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	t≤10S	$R_{\theta JA}$	18	22	℃/W
Thermal Resistance Junction-to-Ambient [D]	Steady-State		45	55	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	2.3	2.8	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SCQ62G06A	F1	Q62G06	5000	10000	100000	13“ reel

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Static Parameter							
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA		60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	T_J=25℃			1	μA
			T_J=55℃			5	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V				±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA		1.2	1.7	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=20A			5.8	7.5	mΩ
		V_{GS}= 4.5V, I_D=10A			7.3	10	
Diode Forward Voltage	V_{SD}	I_S=20A,V_{GS}=0V			0.85	1.3	V
Maximum Body-Diode Continuous Current	I_S					62	A
Dynamic Parameters							
Input Capacitance	C_{iss}	V_{DS}=35V,V_{GS}=0V,f=1MHZ			2000		pF
Output Capacitance	C_{oss}				390		
Reverse Transfer Capacitance	C_{rss}				13		
Gate Resistance	R_g	f=1MHZ, Open drain			1.6		Ω
Switching Parameters							
Total Gate Charge	Q_g(10V)	V_{DS}=30V,I_D=20A			34		nC
Total Gate Charge	Q_g(4.5V)				15.8		
Gate-Source Charge	Q_{gs}				7.8		
Gate-Drain Charge	Q_{gd}				5.2		
Reverse Recovery Charge	Q_{rr}	I_F=20A, di/dt=200A/us			36		
Reverse Recovery Time	t_{rr}				27		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=30V,I_D=12A R_{GEN}=3Ω			10		
Turn-on Rise Time	t_r				36		
Turn-off Delay Time	$t_{D(off)}$				30		
Turn-off fall Time	t_f				57		

A. Repetitive rating; pulse width limited by max. junction temperature.
B. V_{DD}=50V, R_G=25Ω, L=1mH, I_{AS}=18A,.
C. Pd is based on max. junction temperature, using junction-case thermal resistance.
D. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ t≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

■ Typical Performance Characteristics

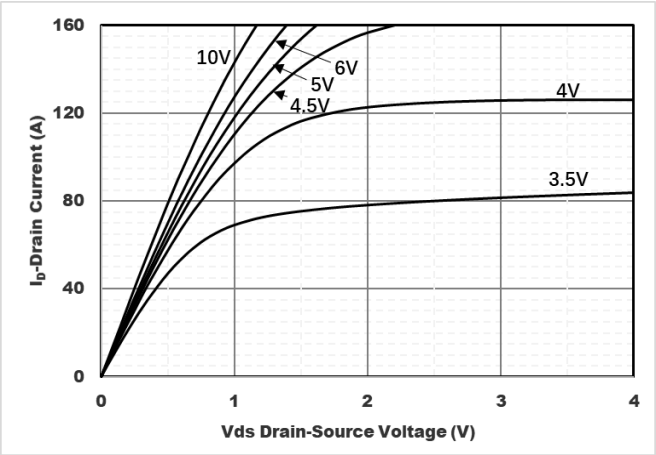


Figure1. Output Characteristics

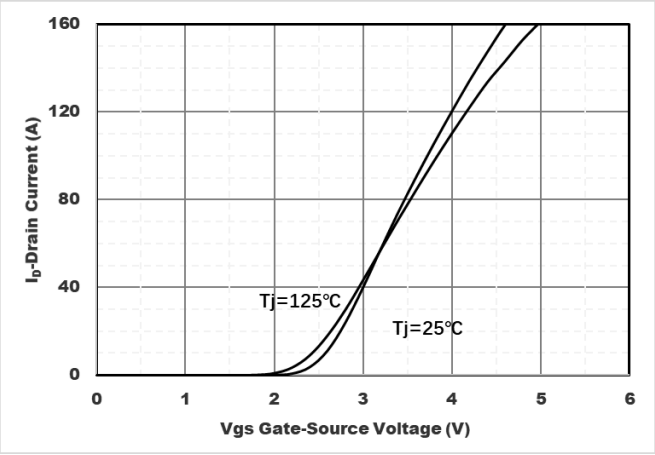


Figure2. Transfer Characteristics

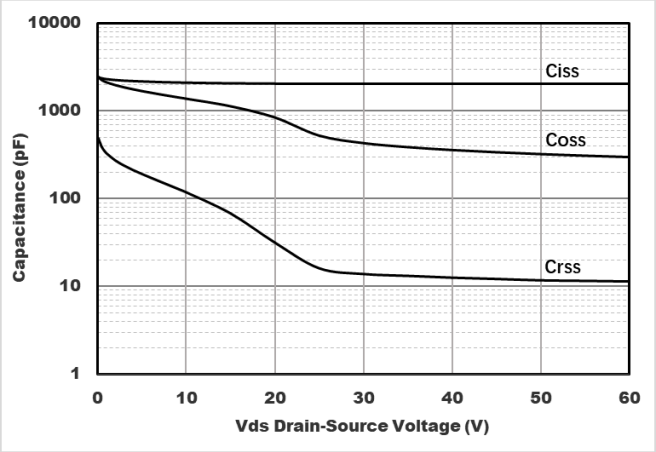


Figure3. Capacitance Characteristics

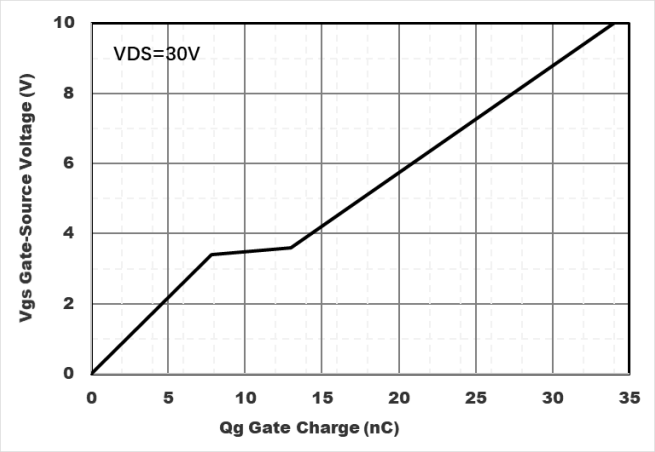


Figure4. Gate Charge

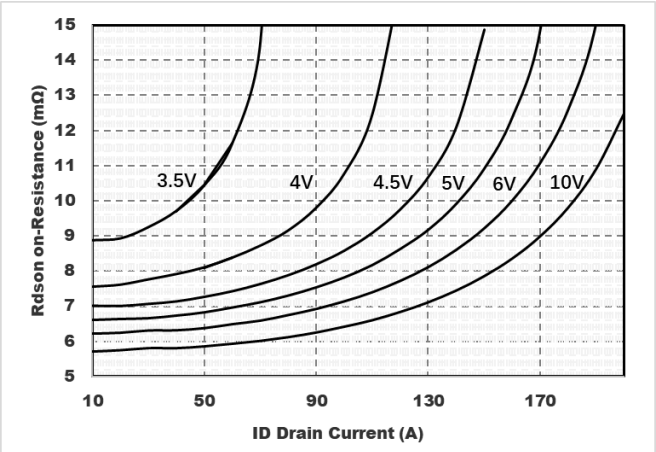


Figure5. Drain-Source on Resistance

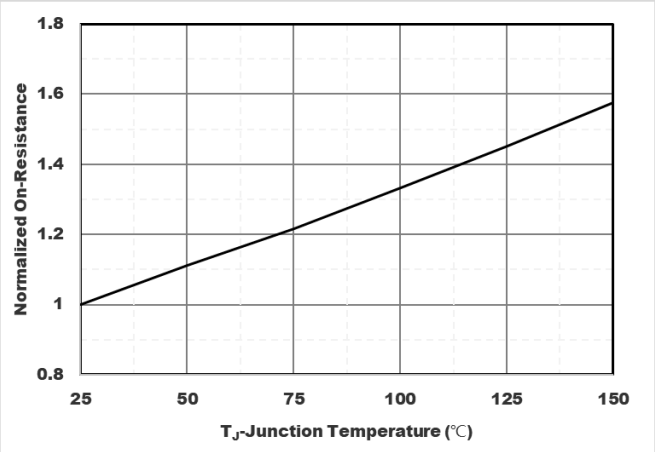


Figure6. Normalized On-Resistance

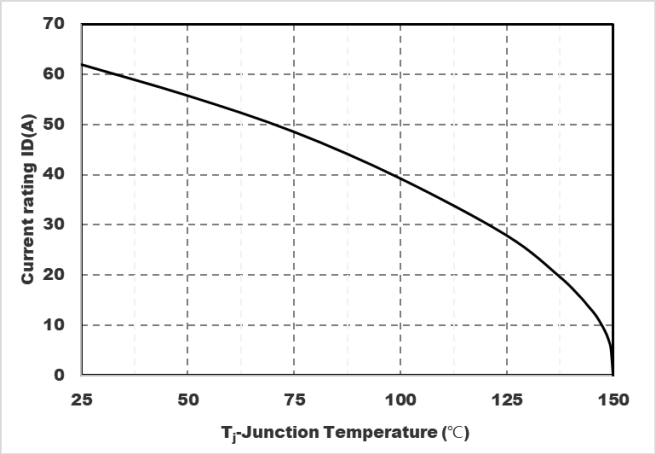


Figure7. Drain current

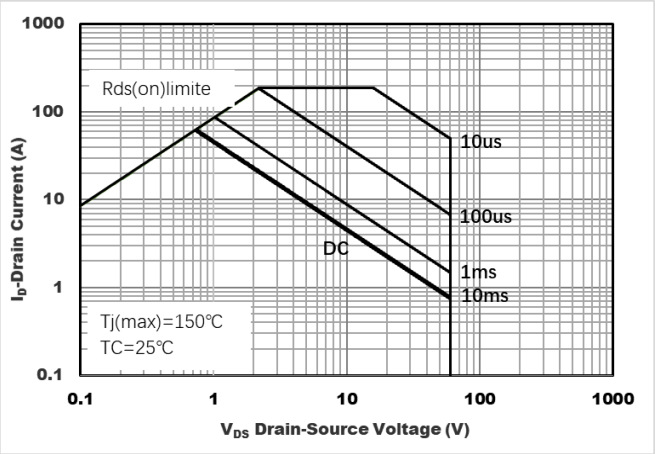


Figure8. Safe Operation Area

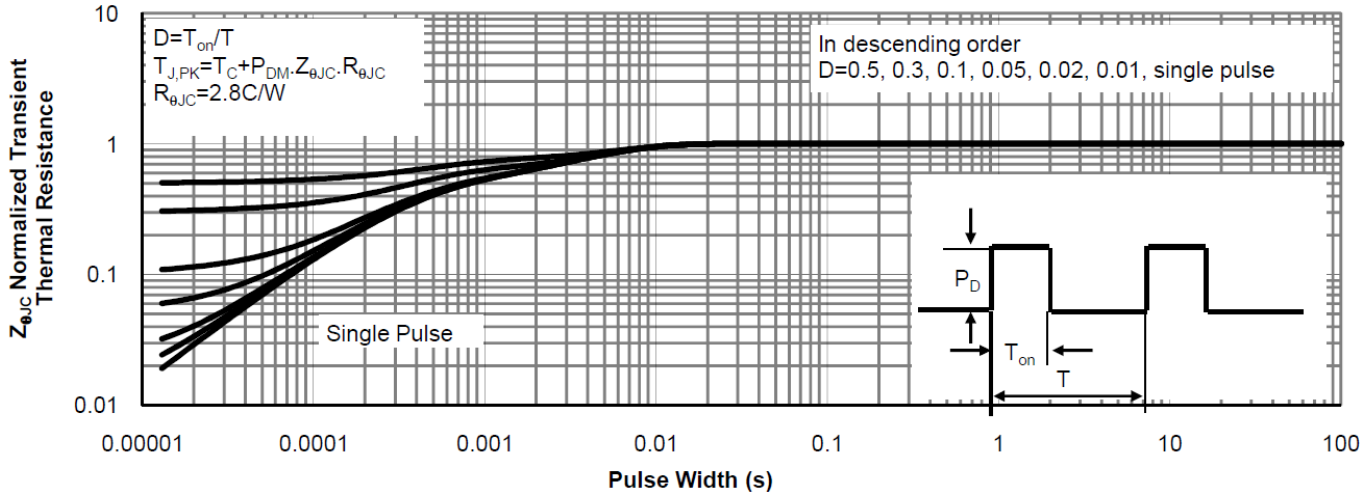
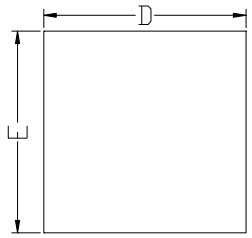
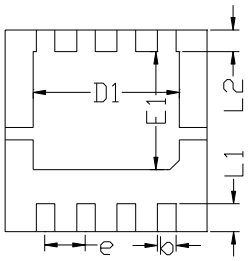


Figure8. Normalized Maximum Transient Thermal Impedance

■ DFN3333-8L Package information



Top View
正面视图

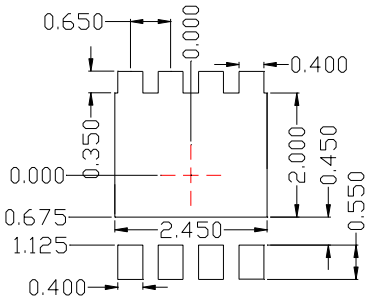


Bottom View
背面视图

Side View
侧面视图

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	3.15	3.25	3.35
E	3.15	3.25	3.35
A	0.70	0.80	0.90
A1		0.20 BSC	
A2			0.10
D1	2.20	2.35	2.50
E1	1.80	1.90	2.00
L1	0.35	0.45	0.55
L2		0.35 BSC	
b	0.20	0.30	0.40
e		0.65 BSC	

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:+/-0.10mm.
3.The pad layout is for reference purposes only.



Suggested Solder Pad Layout
Top View

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